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Heart Failure

IMPACT OF BODY MASS INDEX ON PROGNOSTIC PREDICTION BY CREATININE-BASED ESTIMATED GLOMERULAR FILTRATION RATE AND CYSTATIN C IN HEART FAILURE

Poster Contributions
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Background: Estimated glomerular filtration rate by serum creatinine (eGFRCr) is a measure of renal function and is used to predict prognosis in heart failure (HF) patients; however, this measure is influenced by some non-renal factors. Cystatin C has emerged as a novel serum measure of renal function, and is less affected by muscle mass. Therefore, we hypothesized that body mass index influences the predictive ability of eGFRCr and cystatin C for worse prognosis differently in HF patients.

Methods: Patients admitted for HF (n = 171) were evaluated using eGFRCr and cystatin C. Cohorts were divided into 3 groups according to tertile of BMI (low-, middle-, and high-BMI groups). The endpoint was mortality and/or HF hospitalization, and all cohorts were followed up for median of 295 days.

Results: The mean eGFRCr and cystatin C concentrations were 53.3 ml/min/1.73 m2 and 1.15 mg/L, respectively. Correlation analysis was performed between eGFRCr and 1/cystatin c for all cohorts and tertiles, and we found a significant positive correlation between eGFRCr and 1/cystatin C in all cohorts ($r = 0.70$, $P < 0.001$). This significant correlation was observed in all tertiles; however, the correlation was the weakest in the low-BMI tertile ($r = 0.60$, $P < 0.001$) compared to that of the middle-BMI ($r = 0.73$, $P < 0.001$) and high-BMI groups ($r = 0.74$, $P < 0.001$). In receiver operating characteristic curve analysis, area under the curve (AUC) for predicting worse prognosis was not significantly different in the middle- (0.77 vs. 0.78, $P = 0.74$) and high-BMI groups (0.74 vs. 0.73, $P = 0.88$). However, in the low-BMI group, the AUC of cystatin C was significantly higher than that for eGFRCr for predicting worse prognosis (0.83 vs. 0.66, $P = 0.047$)

Conclusions: Prediction of prognosis in HF patients by cystatin C and eGFRCr is influenced by BMI. Cystatin C may be an important renal function indicator of the prediction of prognosis in HF patients, especially in those with low-BMI.